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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,720	03/25/2004	William Leon Rugg	STL11848	8178

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David K. Lucente, Seagate Technology LLC
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EXAMINER

NGUYEN, THINH T

ART UNIT PAPER NUMBER

2818

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/809,720

Applicant(s)

RUGG ET AL.

Examiner

Thinh T. Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 14-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8/9/06
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

1 This is in response to Applicant's Amendment filed August 09th 2006.

Note that the figures and reference numbers referred to in this Office Action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

2. Claims 1-28 are pending in the Application with claims 14-28 withdrawn from consideration.

Election/ Restriction

3. Applicant's election **with traverse** of claims **1-13** in the communication with the Office on 12/06/2003 and Applicant Argument in the response to the non-final Office Action on August 09th 2006 are acknowledged.

The traversal is on the ground(s) that see the election paper. The traversal on the restriction between device and method is not found persuasive because the fields of search for method and device claims are NOT coextensive and the determinations of patentability of method and device claims are different, that is process limitations and device limitations are given weight differently in determining the patentability of the claimed inventions. Also, the strategies for doing text searching of the device claims and method claims are different as evidenced by their different classification. Thus, separate searches are required. Moreover, another example of distinctness between the device and method claim is that in the method of

claim 26 can be used to make surface acoustic analog device with stacked chips, which the Examiner believe is different from the device that the applicant intend to claim which is basically a digital device for disk drive.

For species restriction , the species are distinct because the device of claim 1 represented Species I the requirement is a minimum of one electrical connector is required for species I , meanwhile for species II, the requirement is a minimum of two electrical connectors.

The requirement is still deemed proper and is therefore made **FINAL**, however, Applicants have the right to file a divisional, continuation or continuation-in-part application covering the subject matter of the non-elected claims.

4. Applicant's amendments to independent claim 1,11,12 have necessitated new grounds of rejection for claims 1-13 . See MPEP § 706.07(a).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. §103(a), which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Masuda et al. (US patent 6,653,331) in view of Reyes et al. (US patent 6,680,219)

With regard to Claim 1, Masuda discloses all the invention of claim 1 including an apparatus comprising: at least two dice (fig 3, ref 1A) ; each of said dice having at least one electrical connection (fig 4 ref 6a, ref 6b, ref 5) disposed on a single surface; said dice electrically coupled with at least one connector (ref 5 fig 4(b)) between said electrical connections that are oriented in the same direction when said dice are stacked and offset.

Missing in the Masuda disclosure is the limitation:

“ a third die that is not stacked with at least two dice ,said third die being electrically connected directly to said at least one of said at least two dice via a direct die-to-die connector.”.

Reyes , however,(in fig 1 and fig 2) discloses a third die that is not stacked with at least two dice ,said third die being electrically connected directly to said at least one of said at least two dice via a direct die-to-die connector.

It would have been obvious to one of ordinary skill in the art the time the invention was made to incorporate this feature , taught by Reyes, into the device invented by Masuda in order to come up with the invention of claim 1.

The rationale is as the following:

A person skilled in the Art at the time the invention was made would have been motivated to improve the circuit density of the Masuda stacked IC package more efficiently and more cost effective as taught by Reyes in column 1 lines 53-55.

With regard to claim 2, Masuda discloses (fig 2, fig 3, fig 4(a) and 4(b)) an apparatus with two identical chips.(fig 2 ref 1A).

The rationale as why claim 2 is obvious over Masuda in view of Reyes has been set forth in the rejection of claim 1.

With regard to claim 3 , Masuda discloses (fig 2, fig 3, fig 4(a) and 4(b)) an apparatus wherein a least one electrical connection is disposed only on one surface (the top surface)

The rationale as why claim 3 is obvious over Masuda in view of Reyes has been set forth in the rejection of claim 1.

With regard to claims 4,5, Masuda discloses (in fig 4(a) and 4(b)) an apparatus wherein the said dices are aligned and are attached.

The rationale as why claims 4,5 are obvious over Masuda in view of Reyes has been set forth in the rejection of claim 1.

With regard to claim 6, Masuda discloses (in fig 4(a) and 4(b), column 4 line 21-23) an apparatus wherein the said dices are attached with adhesive.

The rationale as why claim 6 is obvious over Masuda in view of Reyes has been set forth in the rejection of claim 1.

With regard to claims 7,8, Masuda discloses (in fig 4(a) and 4(b), column 1 lines 15-16) an apparatus wherein the said dices are DRAM memory devices

The rationale as why claims 7,8 are obvious over Masuda in view of Reyes has been set forth in the rejection of claim 1.

With regard to claim 11,12, Masuda discloses (in fig 4(a) and 4(b),) , an apparatus

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wherein one of the stacked die is electrically connected to the other of said stacked die through an intermediate electrical connection external from said dice(fig 4 reference 5) and wherein said electrical connections are disposed on one edge.(the left side edge from the top view in fig 4(a)) .

The rationale as why claims 11,12 are obvious over Masuda in view of Reyes has been set forth in the rejection of claim 1.

With regard to claim 13, Masuda discloses (in fig 4(a) and 4(b),column 1 lines 15) an apparatus that includes flash memory and flash memory are inherently storage devices.

The rationale as why claim 13 is obvious over Masuda in view of Reyes has been set forth in the rejection of claim 1.

With regard to claim 9 , as set forth in the rejection of claim 1, the combined disclosure by Masuda and Reyes discloses all the invention including a dynamic random access memory coupled to a controller (1B, Fig. 3 of the Masuda reference). Missing in Masuda in view of Reyes disclosure is the specific disclosure of a channel that controls read and write function (“channel” as defined by Applicant, Page 1, lines 20-21). However, Masuda’s controller 1B, which controls memory dice (1A, 1A, Fig. 3), which involves providing power to, reading memory from and/or writing memory to the memory dice. Therefore, it would appear that Masuda’s controller 1B has the “channel” function as claimed by Applicant.

The rationale as why claim 9 is obvious over Masuda in view of Reyes has been set forth in the rejection of claim 1.

With regard to claim 10, Masuda (in fig 2) discloses a package in which the controller and memory is package in a single package.

The rationale as why claim 10 is obvious over Masuda in view of Reyes has been set forth in the rejection of claim 9.

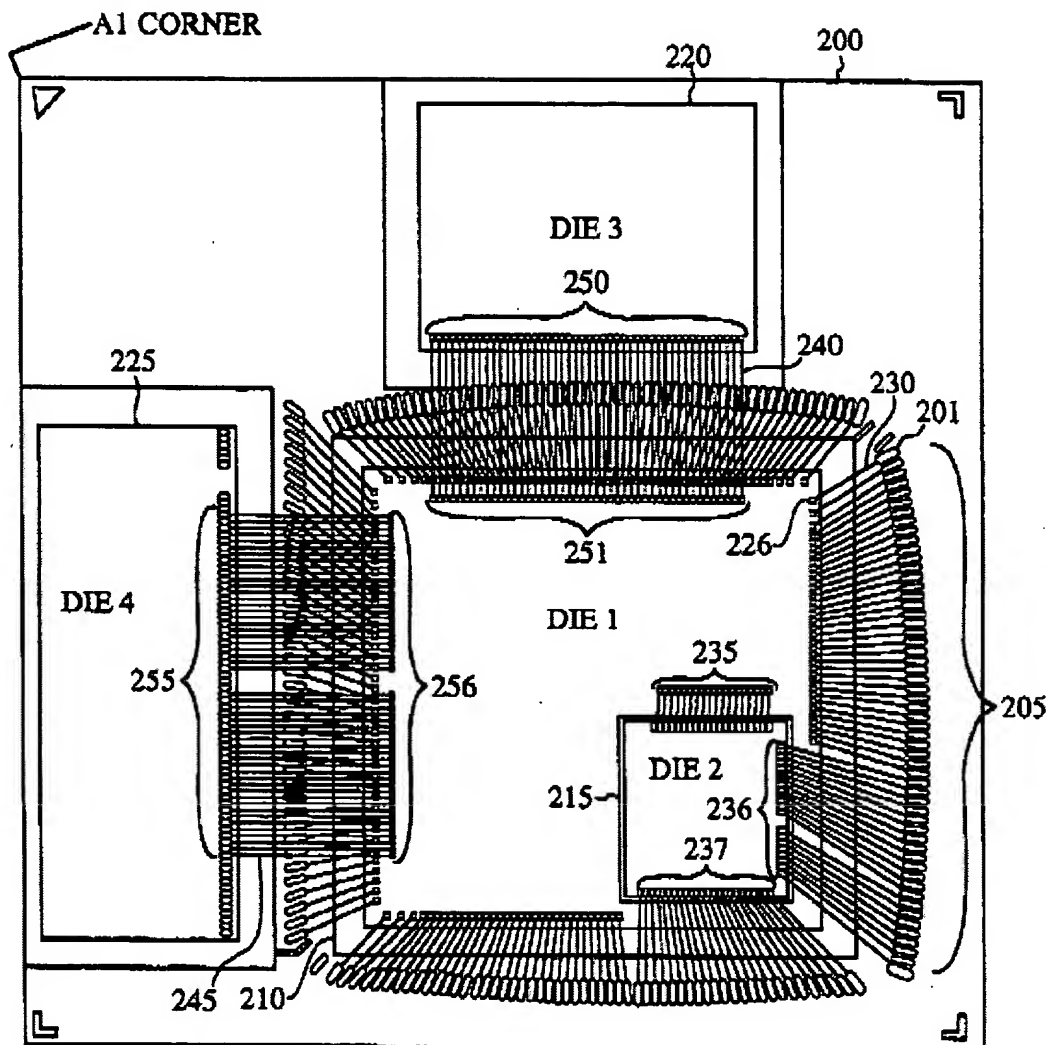


FIG. 2

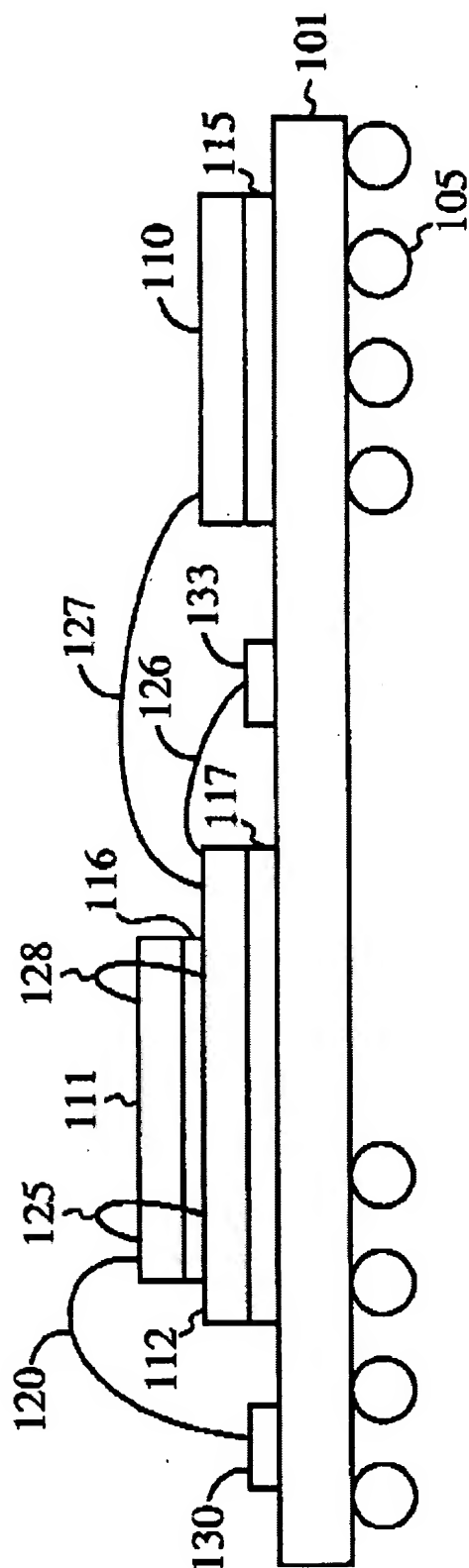


FIG. 1

CONCLUSION

7. **THIS ACTION IS MADE FINAL.** Applicant amendment to the claims necessitate new ground of rejection and make this Office Action final. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thinh T Nguyen whose telephone number is 571-272-1790. The examiner can normally be reached on 9:30 am - 6:30 pm Monday to Friday..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID NELMS can be reached on 571-272-1787. The fax phone numbers for the organization where this application or proceeding is assigned is 571-273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval [PAIR] system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thinh T Nguyen

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And, Nguyen
Primary Examiner